ROLE OF DT DIAPHORASE IN THE CONTROL OF OXYGEN-RADICAL GENERATION BY ONE-ELECTRON QUINONE REDUCTASES

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DT diaphorase, a ubiquitous NAD(P)H-quinone reductase in animal tissues, serves as a potent two-electron reductase for various quinones, converting them into relatively stable hydroquinones. It efficiently competes with one-electron quinone reductases, such as NADPH-cytochrome P-450 reductase, thus preventing the formation of readily autoxidable semiquinones and thereby the generation of superoxide radical. This competition is particularly striking in animals treated with 3-methylcholanthrene and other xenobiotics that act as inducers of DT diaphorase causing a several-fold increase of the cellular levels of this enzyme in comparison to other quinone reductases. The available evidence suggests that inhibition of DT diaphorase in isolated cells as well as intact animals causes a markedly increased sensitivity to quinones, and, thus, that DT diaphorase plays an important role in the control of oxygen-radical generation by one-electron quinone reductases.

Source: https://www.industrydocuments.ucsf.edu/docs/lgkv0000